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NATIONAL METER COMPANY v. YONKERS
WATER COMMISSIONERS.APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR
THE SOUTHERN DISTRICT OF NEW YORK.

No. 192. Argued March 29, 1893. — Decided April 17, 1893.

Claims 3, 4, 5 and 6 of reissued letters patent No. 10,806, granted February 8, 1887 to the National Meter Company, as assignee of Lewis Hallock Nash, for improvements in water-meters, on the surrender of original letters patent No. 211,582, granted to said Nash, January 21, 1879, are not infringed by water-meters constructed according to letters patent reissued to the Hersey Meter Company, No. 10,778, November 2, 1886, as assignees of James A. Tilden, and to letters patent No. 357,159, granted to James A. Tilden, February 1, 1887, and to letters patent granted to said company as assignee of said Tilden, No. 385,970, July 10, 1888.

The Nash piston has a side-rocking movement across the centre of the cylinder, upon successive bearing points made by the contact of a projection on the piston with the recess in the cylinder, or conversely and the piston rotates upon its own axis, so that each projection comes successively into each recess of the cylinder. But in the defendant's structure, there is no side-rocking, nor any rotary motion, and each projection in the piston always operates in connection with one particular corresponding recess in the cylinder, and never leaves that recess.

IN EQUITY. The case is stated in the opinion.

Mr J Edgar Bull and *Mr Edmund Wetmore* for appellant.

Mr Frederick P Fish and *Mr Frederick H. Betts*, (with whom was *Mr George L. Roberts* on the brief,) for appellee.

MR. JUSTICE BLATCHFORD delivered the opinion of the court.

This is a suit in equity, brought in the Circuit Court of the United States for the Southern District of New York, by the National Meter Company, a New York corporation, against the Board of Water Commissioners of the city of Yonkers, another New York corporation, founded on reissued letters

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patent of the United States No. 10,806, granted February 8, 1887, to the plaintiff as assignee of Lewis Hallock Nash, for improvements in water-meters. The application for the reissue was filed December 18, 1886, on the surrender of original letters patent No. 211,582, granted to said Nash, January 21, 1879, for improvements in water-meters, the application therefor having been filed September 4, 1878. The claims of the reissue alleged to have been infringed are claims 3, 4, 5 and 6, which are as follows:

“3. A piston for water-meters, pumps, and motors provided with internal water passages, and having alternate bearing points or projections and recesses adapted, by means of a cylinder-chamber having alternate bearing points or projections and recesses, to have an eccentric or side-rocking movement within and upon continually-changing lines across the centre of said chamber to effect its division at two or more points on its sides into receiving and discharging spaces *cc*, which communicate with the inlet and outlet.

“4. A piston for water-meters, pumps, and motors having alternate bearing points or projections and recesses adapted, by means of a cylinder-chamber having alternate bearing points or projections and recesses, to have an eccentric or side-rocking movement within and upon continually-changing lines across the centre of said chamber to effect its division at two or more points on its sides into receiving and discharging spaces *cc*, which communicate with the inlet and outlet, said piston having a free movement within said cylinder, controlled only by the shape of the cylinder, the shape of the piston and the flow of water through the meter.

“5. A piston for water-meters, pumps, and motors having alternate bearing points or projections and recesses adapted, by means of a cylinder-chamber having alternate bearing points or projections and recesses, to have an eccentric or side-rocking motion within and upon continually-changing lines across the centre of said chamber to effect its division at two or more points on its sides into receiving and discharging spaces *cc*, which communicate with the inlet and outlet, said piston being formed of hard rubber and having a free move-

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ment within said cylinder controlled by the shape of the piston, the shape of the cylinder, and the flow of the water through the meter.

"6. A piston for water-meters, pumps, and motors having alternate bearing points or projections and recesses adapted, by means of a cylinder-chamber having alternate bearing points or projections and recesses, to have an eccentric or side-rocking movement within and upon continually changing lines across the centre of said chamber to effect its division at two or more points on its sides into receiving and discharging spaces *cc*, which communicate with the inlet and outlet, combined with ports controlled by said piston itself in its motion within said chamber."

The defences set up in the answer are (1) that the reissue is invalid as to the said four claims, because it was applied for and secured eight years after the grant of the original patent, not for the purpose contemplated by the statute, of correcting any error that arose from inadvertence, accident or mistake, but for the purpose of changing the patent so that it would claim combinations of devices which were not the subject of the claims of the original patent, nor described therein as being the inventions of Nash for which he obtained said original patent, in order that, by means of the reissue, the plaintiff might prevent the Hersey Meter Company, which manufactured the meters used by the defendant, and had assumed the defence of the suit, from carrying on its business, and, further, on the ground that Nash and the plaintiff unreasonably and fraudulently delayed undertaking to correct the alleged defects by a reissue, and did not make application for the reissue until the Hersey company had made and sold large numbers of meters of the type in question, and that the reissue was applied for and obtained for the sole purpose of procuring a new patent for other and different inventions from those forming the subject-matter of the claims of the original patent, and, further, that the reissue was procured by deceiving the Patent Office, and by fraudulent and untrue representations to that office, and that any right to the reissue was forfeited by the plaintiff's delay and laches, in not apply-

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ing for it until long after the plaintiff had full knowledge of all the facts upon which such application purported to be based, and long after the Hersey company had made, sold and introduced into use meters identical with those used by the defendant, (2) that Nash did not particularly point out and distinctly claim the part, improvement or combination which he claimed as his invention or discovery, but, on the contrary, wilfully and fraudulently made his claims, in the original patent and the reissue in ambiguous language, intended to mislead the public, with the view of making it difficult to determine the real scope of his claims, and of reserving the right to contend for such interpretation thereof as the exigencies of any particular case might, in his judgment or that of his assignee, require, (3) non-infringement, and that the meter used by the defendant is substantially different, in construction and mode of operation, from the meter of the reissue; and that no invention is shown or described in the reissue upon which is, or could have been based any claim which would be infringed by the defendant's meter.

Proofs were taken, and the case was heard before Judge Wallace, who delivered an opinion, (38 Fed. Rep. 588,) holding that the defendant's meter did not infringe any of the claims in question, and entered a decree dismissing the bill, with costs. From that decree the plaintiff appealed to this court.

We do not find it necessary to consider the question of the validity of the reissue, because we are of opinion that the decree of the Circuit Court must be affirmed on the ground that the defendant has not infringed.

The original patent had eight claims, as follows

"1. A piston for water-meters, pumps, and motors having alternate bearing points or projections and recesses adapted, by means of a cylinder-chamber having alternate bearing points or projections and recesses, to have an eccentric or side-rocking movement within and upon continually-changing lines across the centre of said chamber to effect its division at two or more points on its sides into receiving and discharging spaces *cc*, which communicate with the inlet and outlet.

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"2. The piston of a water-meter, pump, or motor constructed with alternate recesses and bearing points or projections *a* and *b*, and a cylinder-chamber having alternate wall-recesses and bearing points or projections *a'* and *b'*, adapted to intermatch with each other at one or more bearing points at one side of the cylinder and allow the projections of each part to bear upon and to pass each other at two or more points at a different side of the chamber, to allow the piston to revolve while it also rocks in constantly-changing lines across the centre of the cylinder-chamber, for the purpose stated.

"3. The piston of a water-meter adapted to have an eccentric or side-rocking movement across the centre of the cylinder chamber and a revolving motion, combined with a registering mechanism by means of a free or shifting connection acting with the continually-changing side-rocking movements of the piston while maintaining a driving relation with the dial mechanism.

"4. The combination, with a piston having an eccentric or side-rocking motion across the centre of the cylinder-chamber and a revolving motion around its own centre to divide the cylinder at two or more bearing points on its sides, of a valve controlled by the movements of said piston and adapted to open and to close receiving and discharging ports in succession, to effect the purpose stated.

"5. A rotary piston having a valve formed therein by opposite end ports or depressions, and adapted to act, in connection with receiving and discharging ports or passages in the cylinder-chamber, to form a valve and piston, into and through which the water entering at the inlet-cylinder end ports passes through one end of the valve into the cylinder on one side thereof, and, reëntering the valve from the other side of said cylinder, passes out at the opposite end ports of said valve, to effect the purpose stated.

"6. A rotary valve-piston having opposite end ports *dd'* communicating with the piston sides by diagonal passages *ee'*, in combination with a cylinder having receiving and discharging ports, communicating with said opposite valve end ports

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and with the receiving and discharging spaces of said cylinder, whereby said valve opens some and closes others of its ports in succession, and to effect the equalization of the pressure of the water at right angles to the direction of the side-rocking and rotary movements of the said valve-piston, as stated.

"7. The inlet device L, having side walls, a perforated end, and an open-end bearing rim, seated adjustably in and forming the inlet-port J of the cylinder-chamber, in combination with the rotary piston, against one end of which the said device bears, for the purpose stated.

"8. The spaces or recesses c' in the walls of the cylinder, between the bearing points b' and the recesses a' , in combination with the piston having alternate bearing points and recesses, whereby to prevent the choking of the flow and insure a uniform action of a piston adapted for operation with a side-rocking motion across the centre of the cylinder and a rotary motion around its own centre."

The meters alleged to infringe were constructed under patents granted to Hersey Brothers, as assignees of James A. Tilden. The first one was No. 324,503, dated August 18, 1885, on an application filed December 22, 1884, for a rotary fluid-meter. It was reissued to the Hersey Meter Company, November 2, 1886, as reissue No. 10,778, on an application for reissue filed September 30, 1886. Another patent was granted to James A. Tilden, February 1, 1887, No. 357,159, on an application filed August 15, 1885, for a water-meter with a revolving, non-rotating piston. A third patent was granted to the Hersey Meter Company, as assignee of James A. Tilden, No. 385,970, for a rotary fluid-meter, July 10, 1888, on an application filed January 25, 1887. The manufacture of the alleged infringing meters was begun, a large number of them were put upon the market, and they were extensively advertised, prior to the filing of the application for reissue No. 10,806.

Nash took one form of the Galloway rotary engine, that described in Reuleaux's "Kinematics of Machinery," translated by Kennedy and published in London, England, in 1876, and made improvements upon it which were necessary and valu-

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able to adapt it for practical use as a water-meter. The Galloway engine was a steam engine. At that time, it was well known that steam and water engines, whether rotary or reciprocating, could be used as meters to measure the flow of fluids passed through them, and various forms of both kinds had been used as meters. The original patent of Nash states that it is contemplated to use the apparatus as a motor or as a pump, and so does the reissue.

Galloway had patented another form of engine in England, by English patent No. 11,485, sealed December 14, 1846, and specification enrolled June 14, 1847. Tilden, the inventor of the defendant's water-meter, took the form of this latter Galloway engine, and made such improvements upon it as were necessary to adapt it to practical use as a water-meter. Both Nash and Tilden supplied the arrangements of ports and discharging spaces necessary for the special form of piston and cylinder-chamber in the respective Galloway engines, adding also a registering device, to operate by attachment to the piston. In the Galloway engine described in the "Kinematics," there is a piston having projections and a cylinder having recesses, but the recesses are more in number than the projections on the piston. In the engine of Galloway's patent of 1846, the piston has the same number of projections that the cylinder has of recesses. In the engine in the "Kinematics," and in the plaintiff's apparatus, the piston has a side rocking movement across the centre of the cylinder, upon successive bearing points made by the contact of a projection on the piston with the recess in the cylinder, or conversely; and the piston rotates upon its own axis, so that each projection comes successively into each recess of the cylinder. But in the piston of Galloway's patent, and in the defendant's structure, there is no side rocking, nor any rotary motion, and each projection on the piston always operates in connection with one particular corresponding recess in the cylinder, and never leaves that recess.

The descriptions of the apparatus in the original and reissued patents of Nash are the same, but in reissue No. 10,806 there is a disclaimer in these words, which was not in the original

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specification "I do not claim, broadly, a piston for water-meters, pumps, and motors having alternate bearing points or projections and recesses adapted, by means of a cylinder-chamber having alternate bearing points or projections and recesses, to have an eccentric or side-rocking movement within and upon continually-changing lines across the centre of said chamber to effect its division at two or more points on its sides into receiving and discharging spaces *cc*, which communicate with the inlet and outlet, as a motor having a piston of substantially such construction and movement within a cylinder-chamber having such construction is shown and described in the English patent of Elijah Galloway, December 14, 1846, No. 11,485, but what I do claim are said elements in combination with additional elements, as hereinafter specified, thereby limiting my claims to the novel features embraced in my meter."

In all of the eight claims of the original patent, except claim 1, a piston revolving about its centre was an element in the combination claimed, and it is a feature in each one of claims 3, 4, 5 and 6 of the reissue. The theory upon which the disclaimer was inserted appears to have been that claim 1 of the original patent did not specify a piston revolving about its centre, and therefore was sufficiently broad to include the arrangement in the Galloway patented engine of 1846. But it does not seem doubtful that such a piston was a necessary element of claim 1 of the original patent, and that it forms an element of every new claim of the reissue. The only piston described in the specification of the original patent, and, therefore, the only one which could have been referred to in claim 1 of the original patent, is one having the side rocking and rotating movement which constitutes the compound motion described in the original specification, which motion is due to the fact that the piston has one or several less projections than the cylinder has recesses. The defendant's meter does not have such a piston, and, therefore, does not infringe any of the claims of the reissue.

The forms of the two Galloway engines are essentially different, and necessitate a different construction and arrange-

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ment of the coöperating devices, to adapt them to efficient service as water-meters. As said by the Circuit Court in its opinion "The inventions of Nash and Tilden commence upon different lines and result in a combination having a different mode of operation. The time and order of controlling the valves differ in each, and require a different arrangement of the valve ports, with reference to the valves which open and close them. In Nash's meter the ports for both entrance and discharge of water are in the ends or sides of the piston, while in Tilden's the ports are not in the piston, but in the ends or heads of the cylinder case, and are so located that the contact of the piston with the cylinder divides each recess into one filling and one discharging passage. In the former the ends of the cylinder act as the valves, in the latter the piston itself acts as the valves. In Nash's meter the rotary and side rocking or compound movement of the piston opens some and closes others of the ports in succession, in such a manner as to equalize the pressure of the water at right angles to the direction of the movements of the piston. In Tilden's meter it is an essential feature that there shall be not merely water pressure which moves the piston about the cylinder-chamber, but additional side pressure, which, in Nash's meter, must be avoided, and it is only because it has a pressure of water not found in Nash's meter that it is operative at all."

In the Nash reissue, it is required that the piston patented should have an "eccentric or side-rocking motion across the centre of a cylinder-chamber to effect its division at two or more points into receiving and discharging spaces." But the defendant's piston has no such motion, and the cylinder-chamber of its meter is not divided by the piston "at two or more points, into receiving and discharging spaces," in the sense of the Nash reissue.

In the Nash reissue, it is required that "with this eccentric or side-rocking action the piston also revolves round its own centre, for as the piston rocks from one bearing point to another directly across the centre of the cylinder it is at the same time revolved." But the defendant's piston has no motion of revolution about its own centre.

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In the Nash reissue, it is required that "in the rotation of the piston around its own centre one or more projecting bearing points of the piston will pass into corresponding recesses at one point of the cylinder, and in contact with and over one or more projecting bearing points of the cylinder at a different point, thereby always maintaining a direct contact of the piston and cylinder at two or more dividing points within the continually changing cylinder spaces." But in the defendant's meter, the bearing points of the piston are always in their own special recesses in the case, and are never in contact with, and never pass over, any of the projecting bearing points of the cylinder; and there never is a direct contact of the piston and cylinder at two or more dividing points, within the meaning of the Nash reissue.

In the Nash reissue, it is required that the valves should be "arranged so that the cylinder spaces on one side of the piston as it revolves have free inlet for the water through one set of the valve ports, while the spaces on the other side of the piston have free outlets for the water through the other ports of the valve." But in the defendant's meter, the division between the inlet and outlet ports is not made by the piston, and all the displacement of the water is effected in the individual chambers of the cylinder, and no two chambers are ever connected while measuring water.

In the Nash reissue, it is required that the valves should so open and close the ports in succession "as to keep the line of pressure of the water as nearly as possible at right angles to the direction of the eccentric or side-rocking and rotary movements of the piston, and thereby avoid any undue lateral pressure of the water upon the piston." But in the defendant's meter, the motion of the piston is of an entirely different character. The "lateral pressure of the water upon the piston," which the Nash structure is designed to avoid, is an essential feature of the operation, and without it, the piston of the defendant's meter would not be kept up against the side of the case, and no water could be measured.

In the Nash reissue, it is required that when a separate valve controlled by the piston is not employed, the valve is

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“formed by inlet and outlet openings or ports in the ends of the piston communicating by means of passages in or through the piston with the spaces of the cylinder.” But in the defendant’s meter, no separate valve is employed, and there are no ports in the ends of the piston, and no passages in or through the piston, which communicate with the spaces of the cylinder, the single passage in the centre of the defendant’s piston is a portion of the discharge-pipe, and it is required only in order to accommodate the water discharged at the bottom of the meter (a double discharge, namely, at the top and bottom of the meter, being used for the purpose of balancing the piston).

In the Nash reissue, it is required that the piston and cylinder should have “bearing or contacting surfaces formed by alternate recesses aa' and projections bb' of such form or configuration as to allow of the rotation of the piston not only upon its own axis but around and across the centre of the cylinder, and the space within the cylinder must be of such form and sufficiently larger than the piston H to allow it to have this compound motion.” But in the defendant’s meter, the projections and recesses are of such form as to prevent the rotation of the piston upon its own axis, and also to prevent its motion around and across the centre of the cylinder, and the space within the cylinder is not of such form as, and not sufficiently larger than the piston, to allow the latter to have that compound motion.

In the Nash reissue, it is stated that “the object of this compound motion is to form bearing points or lines of contact of the piston with the cylinder-walls on opposite sides thereof, at the same time, as shown in Figs. 3 and 12, whereby to divide the cylinder into receiving and discharging spaces.” But in the defendant’s meter, no bearing points, or lines of contact of the piston with the cylinder-walls, on opposite sides thereof at the same time, are formed, and the receiving and discharging spaces are differently situated, and are divided in an entirely different way and on different lines.

In the Nash reissue, it is required that “of whatever form these alternate recesses and projections, they must be such

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that while they are in contact upon one side of the cylinder they must also at the same time have a contact at the opposite or a different side of said cylinder, and in this way divide the cylinder into spaces." But in the defendant's meter, the projections and recesses are of such form that such required mode of dividing the cylinder into spaces by contacts on opposite or different sides of the cylinder is impossible.

In the Nash reissue it is stated that "in this contact it will be observed that upon one side of the cylinder and piston such contact takes place between a recess and projection, or intermediately between these points, while upon the opposite side such contact is made by corresponding projections, as shown in Figs. 3 and 12." But in the defendant's meter, no such contact ever takes place, and there is no contact upon opposite sides of the cylinder, and in each particular chamber, receiving and discharging spaces are formed by that projection of the piston which is in that chamber from the first and never leaves it.

In the Nash reissue, it is stated that "the compound motion of the piston and the contacting dividing points are due to the fact that the piston has one or more less points of projection than the cylinder." But in the defendant's meter there are the same number of projections on the piston and on the cylinder, and consequently no compound motion of the piston is possible.

In the Nash reissue, it is stated that the function of either form of valve described "is to regulate the flow of water in and out of the spaces of the cylinder in such manner as to produce the compound rotation and cross movement of the piston." But in the defendant's meter, the water is admitted and discharged in such a way as to prevent any motion of the piston except a sliding movement, which is neither a compound rotation nor a cross movement, within the meaning of the Nash reissue.

In the Nash reissue, it is required that the valve and piston should "coöperate to produce the results stated," viz., the compound motion of the piston and the proper control of the flow of the water in and out of the spaces of the cylinder. But in